WHAT IS CLAIMED IS:

1. A balloon catheter comprising:

a longitudinal shaft having a lumen in fluid communication with a catheter tip; and

a tubular balloon having proximal and distal ends attached to said shaft such that said balloon is coaxially aligned with said shaft, said distal end being attached to said shaft at a first annulus a distance from said tip, and said proximal end attached at a second annulus a greater distance from said tip, said distal and proximal ends of said balloon attached to said shaft a distance apart that is less than an unattached length of said balloon therebetween whereby a plurality of gathers is formed in said balloon such that inflation of said balloon causes a portion of said balloon to migrate distally over the first annulus.

2. The balloon catheter as in claim 1, wherein said gathers are disposed such that upon inflation of said balloon, the balloon extends distally of said first annulus and proximally of said second annulus.

3. A balloon catheter, comprising:

a longitudinal shaft having a lumen in fluid communication with a catheter tip; and

a tubular balloon having proximal and distal ends attached to said shaft such that said balloon is coaxially aligned with said shaft, and a plurality of adjacent annular restraining rings formed integrally with the

balloon between said proximal and distal ends, said restraining rings being configured to limit radial expansion of said balloon at said restraining rings, while enabling generally uniform circumferential expansion of said balloon on each side of said rings radially beyond the rings when the balloon is inflated.

4. The balloon catheter of claim 3, wherein a plurality of said restraining rings are disposed at a central portion of said balloon, so as to form proximal and distal lobes when said balloon is inflated.

5. The balloon catheter of claim 3, wherein said restraining rings are spaced apart.